



## Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at <http://about.jstor.org/participate-jstor/individuals/early-journal-content>.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact [support@jstor.org](mailto:support@jstor.org).

came the irruption of the Arnauts or Albanians. The result is, that at the present time the old Hellenic blood has entirely disappeared, and all the people of the peninsula are more or less mixed. About 90,000, chiefly at or near Corinth, and on the Ægean coast, still speak Albanian, but all the rest of the inhabitants use modern Greek.

Dr. Hickson has published an interesting book, giving the results of his residence, for nearly a year, upon a small island off the extreme north coast of Celebes. During this stay he made excursions to the northern part of the main island, and also to Nangir, Nanusa, and Talant, small groups between Celebes and the Philippines. About half of the book concerns the northern part of Celebes, especially treating of the mythology and customs of the natives.

The greater part of the island erupted in 1885 in the Tonga group (Falcon Id.) has disappeared, and the existing island is a shelving bank to the northeast of it. The volcanic debris may now form a platform upon which a coral reef, and ultimately an atoll, may be built up.

---

## GEOLOGY AND PALEONTOLOGY.

**Newberry's Paleozoic Fishes of North America.**<sup>1</sup>—In this volume we have collected descriptions of the fishes of the Paleozoic formations of North America, which have been discovered by Professor Newberry since the publication of his report of the geological survey of Ohio, with a few others. The species there described, as well as those described in the report of the geological survey of Illinois, by himself, Mr. St. John, and Prof. Worthen are only enumerated; and those described from the Permian beds of Illinois and Texas, by the present reviewer, are not mentioned. Add to this the fact that no bibliographic references appear, and we see that Professor Newberry has not intended this work to have the characteristics of a complete monograph. It is therefore that we welcome it as a collection of descriptions of numerous remarkable forms of early fish-life discovered by the author, which will greatly advance our knowledge on the subject. This branch of paleontology is an important one, representing as it does our knowledge of the earliest-known Vertebrata, and including as it must the ancestral types of all later forms.

<sup>1</sup> The Paleozoic Fishes of North America, by John Strong Newberry. Monograph No. XVI., U. S. Geological Survey. Pp. 228, plates LIII. Washington, 4to, 1889. Received July, 1890.

The volume is divided into three parts, viz.: I. On the Fishes of the Silurian System; II. On those of the Devonian; and III. On those of the Carboniferous System. The number of species referred to, and the number described in the divisions of these systems, is as follows:

SILURIAN SYSTEM.		
	Enumerated.	Described.
Onondaga Salt Series, . . . . .	2	0
DEVONIAN SYSTEM.		
Corniferous, . . . . .	20	14
Hamilton, . . . . .	8	8
CARBONIFEROUS SYSTEM.		
Chemung, . . . . .	9	9
Catskill, . . . . .	9	9
Waverly, . . . . .	48	5
Cleveland Shales, . . . . .	28	26
Carboniferous Limestone, . . . . .	347	14
Coal Measures, . . . . .	27	2
Total, . . . . .	498	87

Among the eighty-seven species described are a number of very interesting ones, several of which are referred to new genera. From the Corniferous series we have *Acantholepis* and *Acanthaspis* Newb., which the author thinks to be allied to *Cephalaspis*. From the Hamilton, *Goniodus* Newb., probably a Cestracient shark; and *Callognathus* Newb., small forms allied to *Dinichthys*. From the Chemung, *Holomena* Newb., based on the *Pterichthys rugosa* of Claypole, a remarkable Placoderm of large size. From the Cleveland Shale, *Titanichthys* Newb., a member of the *Dinichthyidæ*, but different from *Dinichthys* in the slender edentulous jaws, with two species; *Glyptaspis* Newb., another Placoderm belonging to the *Dinichthyidæ*; *Mylostoma* Newb., another member of the same group, with flattened grinding surfaces on the extremities of the dentary bones; *Trachosteus*, an ally of the same family; and *Actinophorus* Newb., apparently a very primitive representative of the modern superorder of the *Actinopterygia*, and therefore a very interesting discovery. The Waverly produces the new genus *Mazodus* Newb., which is based on the flat-grinding teeth of some Cestracient shark of large size. To the fauna of the Carboniferous Limestone is added the genus *Cœlosteus* Newb., based on a mandibular ramus, with shallow alveolæ for large teeth, probably

allied to *Rhizodus*. Important discussions of the characteristics of the best-known Paleozoic genera are entered on, especially of *Macropetalichthys*, *Onychodus*, *Bothriolepis*, *Dinichthys*, *Titanichthys*, *Mylostoma*, and *Edestus*.

In the discussion of the affinities of these and other genera, the zoologist who has gone beyond the views held in the days of the elder Agassiz will find a good deal to criticise. In fact, modern taxonomic views do not seem to have taken much hold on the mind of Professor Newberry up to the time of writing this book. The principal source of error is the tendency to compare the extinct with very different recent forms, to which they may have some superficial resemblance. This is a tendency much more praiseworthy than the opposite extreme that prevails among paleontologists—that is, the habit of neglecting existing forms, as though all of the latter have originated in modern times, which we well know is not the case. However, when Prof. Newberry compares *Macropetalichthys* with the sturgeons, he is certainly wide of the mark. This genus is a Placoderm, allied to *Homosteus*, and the areas on the cranium indicated by Prof. Newberry as separate elements, comparable to those of the true fishes and *Batrachia*, are not such, but are merely the spaces inclosed by the tubes of the lateral line system. (See Fig. 2, p. 43.) The true cranial segments are different, as I hope soon to show. As to the *Dinichthyidæ*, Professor Newberry follows Huxley in referring them, and of course other Placodermi, to the neighborhood of the *Nematognathi* of modern waters. Since the discovery of the dorsal fin in *Coccosteus* by von Koenen and Traquair, it is evident that the resemblance to the Siluroids is scarcely even superficial. In describing *Cœlosteus*, Prof. Newberry regards it as allied to *Pappichthys*, and the order of the *Halecomorphi*; but this cannot be accepted, as the character of the ossification is that of various truly Paleozoic types, and the general characters approach especially to *Rhizodus*.

In commenting on *Macropetalichthys*, the author asserts that the absence of lower jaw need not be regarded as a character of much importance, as is done by Haeckel and others. In this zoologists will probably agree with Professor Haeckel, and will make the systematic inferences from it which it warrants in the case of the *Pteraspidae*, for example.

In his conclusion that the remarkable structures to which the name *Edestus* has been applied are median dorsal procumbent spines, ichthyologists will agree that Prof. Newberry has given the most plausible of all the attempted explanations yet offered.

The most complete description of structure of any of the genera enumerated, is that of the genus *Dinichthys* Newb. The elements of the skull and shield are pointed out, and its affinity to *Coccosteus* Ag. is demonstrated. Prof. Newberry shows that the eye had an osseous capsule, whose intimate structure considerably resembles that of some existing forms, as the sword-fishes. He describes a foramen which has the position of the pineal foramen of some reptiles; and shows that the eyes were protected by a ring of large bony sclerotic plates. A good deal of light is thrown on the structure of the fins. Thus Prof. Newberry believes that pectoral spines exist. If this be true, the family *Dinichthyidæ* may be regarded as distinct from the *Coccosteidæ*, where Traquair shows that they are absent. Dorsal fin elements are described from what are regarded as probably basilar. Their connections with the axial and vertebral elements are not known, but so far as they go they resemble the elements described by Von Koenen in *Coccosteus*, and indicate a wide difference from the structure of the Siluroids or any other Actinopterygian fishes.

The comb-like bodies found in Ohio coal measures with fishes and *Stegocephalous* Batrachia, originally described by the present critic in the Proceedings of the Amer. Philos. Soc., are redescribed by Prof. Newberry. He is not persuaded that Fritsch, who first found them in the Permian bed of Bohemia, has correctly referred them to the genitalia of the *Stegocephali*, but he is inclined to think them the teeth of fishes.

The fifty-three plates that accompany the text greatly elucidate the subject. We are sorry that they could not have been better executed, but the fault is not Prof. Newberry's. The method of illustration by phototype process has not yet attained perfection, and until it does, and so long as the U. S. Geological Survey insists on using it, there must be some scapegoats.—E. D. COPE.

**Chinese Accounts of the Mammoth.**—The gradual cooling of the Asiatic climate may be supported by the existence of the bones of the mammoth in northern Siberia. This hairy elephant lived in that country when the air was temperate, and when abundant forests supplied it with the young twigs on which it lived. Since that time northern Siberia has become an intolerably cold desert. The ground there is constantly frozen to a depth of more than two feet below the surface, and produces only moss, with a few modest-looking flowers. The mammoth very early drew the attention of the Chinese. It is first mentioned in the *Er-ya*, and next in Chuang-tse, in the third

century before Christ. The enormous quantities of valuable ivory which the remains of the mammoth in Siberia furnish made known to the ancient Chinese the existence of the animal through their trade with Tartary. On account of its being found in very many localities imbedded in the soil and in rocks, old books always speak of it as a monstrous mole living underground. It was found, they tell us, in China and in Tartary. Chuang-tse wrote as a poet, and pictures it (*yen shu*) as drinking a river of water before its thirst was satisfied. He had been told of the fossil bones or had seen them, and filled up the picture by the aid of imagination, either his own, or that of those from whom he heard the story. Seven centuries afterwards a medical writer, Tao Hung-king, says: "It is found in forests, and is as large as a water buffalo. It is in form something like a pig. Its color is a greyish-red. Its feet are like those of the elephant. Its breast and upper tail are white, and blunt though powerful. Its flesh is eaten, and is like that of the cow. It is known by the name 'King of the Shu tribe.' In calamitous years this animal often appears."

In the seventh century this account of the animal was discredited. Its great size was not believed. Its hiding and walking in the earth were thought absurd. These disparaging criticisms were made by Chên T'sang-chi, an eminent writer, who does not seem to have been shown any of the bones of the animal. Yet in the eleventh century Su Sung defended the statements of early writers on the subject. Bones of some large unknown animal had been found at T'sangchou, near Tientsin, just as the *Tsin* History states that at Siuencheng, a little way southwest of Nanking, there had been found similar remains in the third century. It was also related that the same animal existed in Tartary, where the larger specimens weighed one thousand catties, and was fond of living in water. It was like an elephant in the legs, though it had the hoofs of a donkey. Another place where it was found was at Tsiuning, near Pingyang Fu in Shansi. The people called it the "recumbent cow." It used to wander among the mountains at times, and drop its hair in the fields. Each one became a rat, and great was the damage to the crops. The Liang history says that in Japan there is a large animal like a cow of the Shu class, which is eaten by a great serpent. These are all instances of the mammoth ("hidden, *shu*") and prove the correctness of Tao's words. Tao has been blamed without reason by men who had not themselves inquired into the truth of his statements. The name by which this animal is known in Shensi is "the small donkey." Such are the testimonies of the existence of the mammoth collected by the author of the *Pent'sao*.

The Chinese accounts of a monster animal as given in the *Pent'sao* could not, if taken alone, be regarded as agreeing with the Siberian mammoth except in a rough way, yet they are very important. Early in this century the remains of that animal were found in so many parts of Siberia, and the ivory was of such great commercial value that the whole scientific world was interested. Cuvier in France was absorbed in the contemplation of the remarkable bones submitted to him, and decided that as the mammoth was met with often with the flesh undecayed, there must have been a sudden change of climate from temperate to extremely cold to account for the frozen condition in which the remains were found. Klaproth, who was then at Kiachta, visited the Chinese drug shops and found that the bones were known to the Chinese there. They gave him the name of the animal as it was recorded in the *Pent'sao*. It was he that suggested that the throne of ivory of the Mongol Emperors was formed of the tusks and teeth of the Siberian mammoth, and that Chinese traders for two thousand years would be ready to buy on any occasion the ivory which was from time to time discovered and brought away. He went home to Berlin, and made known to the learned world that the Chinese had accounts of the animal. The passages he translated are apparently those which are found in the *Pent'sao*, in the chapter on the class *Shu*, which includes the Rodentia with the squirrel, sable, ermine, and weasel. There can be no doubt that the mammoth, and possibly other fossil animals known to the Chinese, are assigned to the class *Shu*, because they were supposed to hide themselves in the soil of cultivated fields, and to have died underground in the position where their bones were afterwards found.

In a work published in 1887, "Mammoths and the Flood," by Henry Howorth, M.P., author of "A History of the Mongols," the attempt is made to prove that the change of the Siberian climate from mild to severe was sudden. Lyell's uniformitarian doctrine is opposed. Yet the evidence from China of a gradual change of climate in that country was not known to this author, and if he had had this evidence before him, showing as it does that there is a very slow refrigeration taking place, causing gradual changes in the vegetable as well as the animal world, he might have modified his theory. Perhaps the best form for the hypothesis to assume is that of a rapid local refrigeration in Siberia, joined with a slow refrigeration generally over the Asiatic continent. The Chinese facts on climate point distinctly to a slow refrigeration, but do not in any way suggest a sudden catastrophe by which the heat shown by the thermometer was reduced to a

large extent. The Chinese mammoth has been found in four principal localities : in the Yellow River alluvium near Tientsin, in the loess formation near the centre of Shansi, in Shensi, also on the banks of the Yangtze River in Anhui. It was this last discovery that drew the attention of Tau Hung-king, who belonged to Nanking, and being a noted Taoist, and a writer of the school of Pao Pu-tsz, would feel the deepest interest in the discovery so near his home.—*North China (Shanghai) Herald*.

---

#### MINERALOGY AND PETROGRAPHY.<sup>1</sup>

**Petrographical News.**—The results of the investigation of the clastic, metamorphic, and eruptive rocks of the Coast Ranges of California, promised by Mr. Becker a few years ago,<sup>2</sup> have recently<sup>3</sup> appeared in an extended form. The principal conclusions of the study have already been referred to in these notes. The proofs which Mr. Becker offers for the correctness of the statements that many serpentines of the Coast Ranges are altered sediments will probably be accepted by most petrographers as sufficient. His conclusion that typical diabases, diorites, and gabbros are likewise derived from clastic materials will not find such ready acceptance, as there seems to be no positive evidence that such rocks were originally sediments, rather than eruptives, which squeezed themselves into fragmental beds, and so caused the formation of a graded series, with sandstone at one end and a holocrystalline rock at the other end. There is no reason to suppose that holocrystalline<sup>4</sup> rocks may not have sometimes originated by metasomatic alteration of fragmentals ; but the belief that a rock with the peculiar structure of diabase has originated in this way will require stronger proof for its acceptance than that offered in Mr. Becker's monograph. The presentation of a few illustrations of types of rocks intermediate between the sandstones and the diabases (pseudo-diabases of Becker, metadiabases of Dana) would have aided materially in enabling readers of the volume to draw their own conclusions as to the origin of the rocks in question. In the discussion of the massive rocks of the region, the term *asperite* is proposed as a general one to include all andesitic rocks with a rough trachytic habit. In this

<sup>1</sup> Edited by Dr. W. S. Bayley, Colby University, Waterville, Me.

<sup>2</sup> AMERICAN NATURALIST, Aug. 1886, p. 724.

<sup>3</sup> Monographs of the U. S. Geol. Survey, Vol. XIII., pp. 56-175.

<sup>4</sup> Cf. Van Hise. AMER. NATURALIST, 1886, p. 723.